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being operable to limit the voltages developed across the inductor and the capacitor to non-destructive levels.

14. (Amended) In an inverter circuit having at least one pair of alternately conducting transistors in circuit with a DC voltage input and being operable to provide an AC voltage [output] across a pair of outputs, the improvement comprising:

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[means comprising a series-connected combination of] an inductor and a capacitor connected in series with one another between said pair of outputs and connected in circuit with the transistors [and] to be alternately energized upon alternate conduction thereof, said inductor and capacitor having a natural resonant frequency; and

means for providing drive current to the transistors to control each conduction period thereof to be shorter in duration than one quarter of the [full] period of [corresponding to] the natural resonant frequency [of the inductor and capacitor combination].

Please cancel without prejudice claims 50, 51, 52 and 53.

Please add claims 54 and 55 as follows:

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54. The inverter circuit of claim 32 in which said direct electrical connection is provided through a switch.

55. The inverter circuit of claim 54 in which said switch has one position in which the power supply means is directly connected with the power supply leads to produce a DC output from a first level AC input and a second position in which the power supply means is directly connected with the power supply leads to produce a DC output from a second level AC input which is substantially greater than said first level AC input.

Please add new claims 56-85, as follows:

56. ~~In~~ an inverter the improvement comprising:

a pair of transistors;

a saturable inductor connected with said transistors for causing alternate conduction thereof to produce a substantially squarewave voltage across a pair of output terminals;

an inductor and a capacitor connected in series across said pair of output terminals; and

means for connecting a load in circuit with the capacitor to supply current thereto.

57. The inverter of claim 56 in which said voltage output has a plurality of frequency components and the series connected inductor and capacitor resonate at a frequency not greater than the lowest frequency component of said voltage.

58. The inverter of claim 56 or 57 in which current supplied to the load is substantially sinusoidal and lagging in phase with respect to the output voltage.

59. The inverter of claim 58 in which said load is a fluorescent lamp.

60. The inverter of claim 56 in combination with a load connected across the capacitor by said connecting means which causes the voltage provided thereto to be substantially changed in both amplitude and waveshape relative to the squarewave voltage output.

61. The inverter of claim 56 in which said transistors are connected in series across a DC power supply.

62. The inverter of claim 56 or 61 in which said inductor and capacitor provide impedance matching between the squarewave output voltage and the load.

63. The inverter of claim 62 in which said load is a fluorescent lamp.

64. The inverter of claim 56 in which said load is a fluorescent lamp and said current supplied thereto is substantially constant in amplitude and has a substantially sinusoidal waveshape.

65. The inverter of claim 64 in which said inverter has means for connecting it with a pair of conventional AC utility power lines.

66. The inverter of claim 65 including means for directly connecting one of said pair of power lines with one of said output terminals and one side of said fluorescent lamp.

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67. The inverter of claim 56 in which said load is a fluorescent lamp and said series combination resonates to provide a voltage across the capacitor which is substantially greater than that of the squarewave output voltage, and including means for applying the voltage provided across the capacitor to the fluorescent lamp.

68. The inverter of claim 56 in which said load is a fluorescent lamp having a pair of cathodes and said inverter has means for connecting it with a pair of regular utility AC power lines to receive relatively low frequency alternating power therefrom to provide a relatively high frequency voltage across said pair of cathodes.

69. The inverter of claim 68 including means for providing a direct electrical connection between one of said pair of power lines and one of the cathodes of the fluorescent lamp.

70. The inverter of claim 56 in which the impedance of said lamp is substantially less during ongoing operations than during an initial starting period.

71. The inverter of claim 56 in which said load is a fluorescent lamp and connection of said lamp causes the square-wave voltage applied thereto to be transformed to a substantially sinusoidal waveshape.

72. The inverter of claim 56 in which said capacitor functions substantially as a current source with the voltage developed across the capacitor being substantially larger for a load of relatively high impedance than for a load of relatively low impedance.

73. In a half-bridge inverter circuit having a pair of series-connected capacitors connected with one another at a first point and a pair of series connected transistors connected with one another at a second point, said series-connected capacitors being connected in parallel with said series-connected transistors, and in which said inverter provides an output between said first point and said second point having a plurality of frequency components, the improvement comprising:

a series connection of an inductor and a capacitor connected across the first and second points of said inverter circuit, said inductor and capacitor having a series-resonant frequency that is not higher than the lowest frequency component of the output of the said inverter; and

means for connecting a load in circuit with said capacitor.

74. In a half-bridge inverter adapted to be powered from a DC voltage to provide a substantially squarewave output voltage across a pair of output terminals, said DC voltage being derived from the alternating voltage present across a pair of regular electric utility power lines, said inverter comprising two series-connected capacitors connected in parallel with two

series-connected transistors, one of said terminals being the point of connection between the two series-connected capacitors, the improvement comprising:

two single wave rectifiers connected in opposite polarities from one line of said pair of power lines to opposite ends of the two series-connected capacitors; and

a conductor connected between the other line of said pair of power lines to the point of connection between the two series-connected capacitors so that one of the inverter output terminals is directly connected with and referenced to one of the power lines.

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75. In an inverter for providing a substantially square-wave output voltage across a pair of output terminals, the improvement comprising:

an inductor connected in circuit with the pair of output terminals; and

a load connected with the inductor and having a component of capacitive reactance to cause the voltage developed thereacross to be larger in magnitude than that of said squarewave output voltage.

76. The inverter of claim 75 in which said inductor is a current-limiting inductor connected in series with one of the said pair of output terminals,and said load is connected in series between the said inductor and the other of said output terminals, said load having a capacitive reactance element for causing the power drawn from the said pair of output terminals to have an improved power factor for increased efficiency.

77. The inverter of claim 75 in which said load is a fluorescent lamp connected in series with said inductor and including a capacitor connected in parallel with the lamp for

causing the current therethrough to be substantially sinusoidal.

78. In a half-bridge inverter circuit having two transistors connected in series across a DC power supply, each of said transistors having a set of input control terminals, the improvement comprising:

a pair of transformers connected in circuit with said sets of input control terminals,

means for decoupling said transformers from one another to minimize the effect of the currents and voltages occurring at one of the sets of control terminals on the currents and voltages occurring at the other of the sets of control terminals.

79. In a fluorescent lamp ballast having two output terminals for connection with two input terminals of a fluorescent lamp to provide suitable starting and operating voltages therefor, said two input terminals having a capacitor connected thereacross, the improvement comprising:

means releasibly connecting said fluorescent lamp in circuit with said two output terminals; and

means for preventing said starting and operating voltages from appearing across said output terminals except when the fluorescent lamp is connected therewith to render the output terminals substantially free from electric shock hazard whenever the fluorescent lamp is disconnected.

80. The inverter of claim 79 including means for releasibly connecting a capacitor, a series combination of the inductor with the capacitor releasibly connected across said source of AC voltage, and means for releasibly connecting said load in circuit with the capacitor, said connecting means also connecting said series combination across said source of AC voltage whenever the load is connected with the capacitor, whereby the high voltage of the capacitor is connected in series circuit with the inductor whenever the load is connected and the

capacitor is disconnected from the circuit whenever the load is disconnected.

81. A ballast for a gas discharge lamp having means to receive input power from a source of substantially squarewave voltage comprising:

a series combination of an inductor and a capacitor connected across the voltage source, said series combination having a natural series resonant frequency which is substantially equal to or less than the fundamental frequency component of said squarewave voltage and causing the gas discharge lamp to be provided with a substantially sinusoidal voltage of magnitude adequate for effective lamp starting and with a limited current of substantially sinusoidal waveshape for continuous lamp operation;

means to connect said gas discharge lamp in parallel circuit with said capacitor; and

means for connecting said series combination in circuit across said source of voltage.

82. In a half-bridge inverter including two transistors connected in series across a DC power supply, each of said transistors having a set of input control terminals, the improvement comprising:

a pair of saturable inductors;

means for coupling said pair of saturable inductors to the control input terminal sets of said pair of transistors, respectively; and

means for de-coupling said pair of saturable inductors magnetically whereby the effect of current and voltages at one of the two sets of transistor input control terminals on the current and voltages occurring at the other set of transistor input control terminals is minimized.